

IN THE CLAIMS

1. (Previously presented) A vehicle, comprising:
two or more wheel, and
one or more electric motors, each mounted in an in-wheel, near-wheel, or direct-drive manner,
wherein at least one motor is an in-wheel motor with torque density of at least 20 Nm/kg and includes:
a multiphase machine having:
a rotor,
a stator, including a plurality of stator core elements, the plurality of stator core elements being arranged in groups, each group of stator core elements being associated with a corresponding one phase of the multiphase machine, the stator core elements in each group being structurally and electromagnetically isolated from the stator core elements in each other group, and
a controller for controlling electrical flow in each group of stator core elements independently of electrical flow in each other group, whereby each phase of the multiphase machine is controlled independently of each other phase.

2. (Currently amended) A vehicle comprising:
two or more wheels, and
at least one electric motor moving the vehicle; the at least one electric motor includes an in-wheel motor with torque density of at least 20 Nm/kg and includes:
a multiphase machine having:
a rotor,
a stator, including a plurality of stator core elements, the plurality of stator core elements being arranged in groups, each group of stator core elements being associated with a corresponding one phase of the multiphase machine, the stator core elements in each group being structurally and electromagnetically isolated from the stator core elements in each other group,
and

a controller for controlling electrical flow in each group of stator core elements independently of electrical flow in each other group, whereby each phase of the multiphase machine is controlled independently of each other phase.

3. (Currently amended) A vehicle comprising:

two or more wheels, and

at least one electric motor moving the vehicle; the at least one electric motor includes a near-wheel motor with torque density of at least 20 Nm/kg and includes:

a multiphase machine having:

a rotor,

a stator, including a plurality of stator core elements, the plurality of stator core elements being arranged in groups, each group of stator core elements being associated with a corresponding one phase of the multiphase machine, the stator core elements in each group being structurally and electromagnetically isolated from the stator core elements in each other group,
and

a controller for controlling electrical flow in each group of stator core elements independently of electrical flow in each other group, whereby each phase of the multiphase machine is controlled independently of each other phase.

4. (Currently amended) A vehicle comprising:

two or more wheels, and

at least one electric motor, where each at least one electric motor is mechanically linked with only one wheel of the vehicle and the torque density of each at least one electric motor is at least 20 Nm/kg and includes:

a multiphase machine having:

a rotor,

a stator, including a plurality of stator core elements, the plurality of stator core elements being arranged in groups, each group of stator core elements being associated with a corresponding one phase of the multiphase machine, the stator core elements in each group being structurally and electromagnetically isolated from the stator core elements in each other group,
and

a controller for controlling electrical flow in each group of stator core elements independently of electrical flow in each other group, whereby each phase of the multiphase machine is controlled independently of each other phase.

5. (Currently amended) A vehicle comprising:

two more wheels, and

at least one electric motor, where each at least one electric motor directly drives one or more wheels of the vehicle and the torque density of at least one motor is at least 20 Nm/kg and includes:

a multiphase machine having:

a rotor,

a stator, including a plurality of stator core elements, the plurality of stator core elements being arranged in groups, each group of stator core elements being associated with a corresponding one phase of the multiphase machine, the stator core elements in each group being structurally and electromagnetically isolated from the stator core elements in each other group,
and

a controller for controlling electrical flow in each group of stator core elements independently of electrical flow in each other group, whereby each phase of the multiphase machine is controlled independently of each other phase.

6. (Previously presented) A vehicle comprising:

two or more wheels, and

at least one electric motor, where each at least one electric motor includes an in-wheel motor with each of its electromagnetic circuits being sufficiently isolated so that electromagnetic and electrical interference between the circuits is substantially eliminated in order to increase the effective response of each at least one electric motor to control and optimization.

7. (Currently amended) A vehicle comprising:

two or more wheels, and

at least one electric motor, where each at least one electric motor includes an in-wheel motor with a motor control scheme that can be dynamically adapted to user inputs, machine operating conditions and machine operating parameters to form an adapted control scheme.

8. (New) A method comprising:

providing a vehicle having:

two or more wheel, and

one or more electric motors, each mounted in an in-wheel, near-wheel, or direct-drive manner,

wherein at least one motor is one of an in-wheel motor, a near-wheel motor, a motor mechanically linked with only one wheel of the vehicle, and a motor that directly drives one or more wheels of the vehicle, with torque density of the at least one motor is at least 20 Nm/kg and includes:

a multiphase machine having:

a rotor,

a stator, including a plurality of stator core elements, the plurality of stator core elements being arranged in groups, each group of stator core elements being associated with a corresponding one phase of the multiphase machine, the stator core elements in each group being structurally and electromagnetically isolated from the stator core elements in each other group, and

a controller for controlling electrical flow in each group of stator core elements independently of electrical flow in each other group, whereby each phase of the multiphase machine is controlled independently of each other phase.

9. (New) A method comprising:

providing a vehicle having:

two or more wheels, and

at least one electric motor, where each at least one electric motor includes an in-wheel motor with each of its electromagnetic circuits being sufficiently isolated so that electromagnetic and electrical interference between the circuits is substantially eliminated in order to increase the effective response of each at least one electric motor to control and optimization.

10. (New) A method comprising:

providing a vehicle having:

two or more wheels, and

at least one electric motor, where each at least one electric motor includes an in-wheel motor with a motor control scheme that can be dynamically adapted to user inputs,

machine operating conditions and machine operating parameters to form an adapted control scheme.